

Interactive comment on “Oxidative capacity of the Mexico City atmosphere – Part 1: A radical source perspective” by R. Volkamer et al.

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Volkamer et al. calculated $j(\text{HONO})$ using measured actinic flux spectra, absorption cross sections recommended by Sander et al. (2006), and an assumption of unity quantum yields. They then applied a factor of 1.43 to the $j(\text{HONO})$ data to account for recent findings by Wall et al. (2006). I think there is no need for a correction, let alone a factor of 1.43. Basically this would mean that recently measured HONO absorption cross sections, i.e. Stutz et al. (2000), are wrong by a similar factor. Moreover, Wall et al. (2006) actually reported a smaller correction and the factor of 1.43 remains unexplained.

Wall et al. (2006) infer a factor of 1.19 by using measured $j(\text{HONO})$ from a chemical actinometer, simulated actinic flux spectra, and absorption cross sections from an

earlier recommendation by Sander et al. (2003). The older recommendation produced 7–8% greater $j(\text{HONO})$ compared to the most recent recommendation by Sander et al. (2006). Thus a factor of 1.28 were appropriate to account for the results by Wall et al. (2006). However, there are several reasons why this correction should not be applied. Firstly, these results are merely based on simulated actinic flux spectra. Secondly, Equation (18) by Wall et al. is erroneous because it is based on an incorrect factorisation of an integral. Thirdly, such a correction is inconsistent with the good agreement within 10% between measured and simulated $j(\text{HONO})$ of the same work by Wall et al., supporting the used HONO absorption cross sections.

References

Stutz, J., Kim, E. S., Platt, U., Bruno, P., Perrino, C., Febo, A.: UV-visible absorption cross sections of nitrous acid, J. Geophys. Res. 105(D11), 14585-14592 (2000).

Sander, S. P., Friedl, R. R., Ravishankara, A. R., Golden, D. M., Kolb, C. E., Kurylo, M. J., Huie, R. E., Orkin, V. L., Molina, M. J., Moortgat, G. K. and Finlayson-Pitts, B. J.: Chemical Kinetics and Photochemical Data for Use in Atmospheric Studies, Evaluation Number 14, JPL Publ. 02-25, 2003.

Wall, K. J., Schiller, C. L., Harris, G. W.: Measurements of the HONO photodissociation constant, J. Atmos. Chem. 55, 31-54, 2006.

Sander, S. P., Friedl, R. R., Ravishankara, A. R., Golden, D. M., Kolb, C. E., Kurylo, M. J., Molina, M. J., Moortgat, G. K., Keller-Rudek, H., Finlayson-Pitts, B. J., Wine, P. H., Huie, R. E. and Orkin, V. L.: Chemical Kinetics and Photochemical Data for Use in Atmospheric Studies, Evaluation Number 15, JPL Publ. 06-2, 2006.

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